Nanotech-based Potential Coronavirus Treatment, Focus of Tiziana Life Sciences' New Patent

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Tiziana Life Sciences revealed it has filed a patent application on the combination of nanoparticle-Actinomycin D (NP-ACT D) with anti-interleukin-6 receptor monoclonal antibody (anti-IL-6R) for the treatment of coronavirus (COVID-19).

Tiziana Life Sciences plc, a biotechnology company focused on innovative therapeutics for inflammatory, autoimmune and infectious diseases, announced that it has filed a provisional patent application on the combination of nanoparticle-Actinomycin D (NP-ACT D) with anti-interleukin-6 receptor monoclonal antibody (anti-IL-6R) as a potential therapy for management of COVID-19 disease.

The underlying invention concepts are based on the hypothesis that a combination of an antiviral drug controlling proliferation of COVID-19, with an anti-inflammatory agent (e.g., anti-IL-6R) suppressing a possible 'Cytokine Storm' may provide immediate relief to severe cases of COVID-19 patients.

Actinomycin D (ACT D), an antibiotic drug approved initially for infectious diseases in the United States in 1964, is on the World Health Organization's List of Essential Medicines as the most effective medicine needed in a health system (1). However, severe toxicities associated with the intravenous administration of ACT D limits its widespread therapeutic utility.

Nanotechnology in Battle Against Coronavirus ...

The NP-ACT D formulation, effectively controlling slow and sustained release, may overcome the severe toxicities of ACT D. Side-by-side animal studies have compared NP-ACT D with free ACT D and demonstrated that the intravenous treatment with NP-ACT D was well-tolerated

with minimal apparent toxicities in animal models. Importantly, results from another animal study comparing free ACT D side-by-side with an equivalent dose of NP-ACT D, showed 0% mortality in rats dosed with NP-ACT D as compared to > 90% mortality with free ACT D (2). Nonetheless, safety and tolerability of NP-ACT D needs to be evaluated in healthy volunteers prior to any clinical studies.

Patients infected with COVID-19 are known to develop an uncontrolled immune response ("cytokine storm"), which results in excessive production of pro-inflammatory cytokines such as IL-6 and TNF-a both of which are regarded as key drivers of chronic inflammation and are believed to be associated with severe lung damage commonly observed in patients with COVID-19 infections and acute respiratory distress syndrome (ARDS).

Therefore, Tiziana believes it is possible to potentially combine TZLS-501 (anti-IL6R) with NP-Act D to inhibit viral proliferation and to suppress inflammation in lungs to halt progression of COVID-19-mediated lung damage and death.

Read the original article on Tiziana Life Sciences.